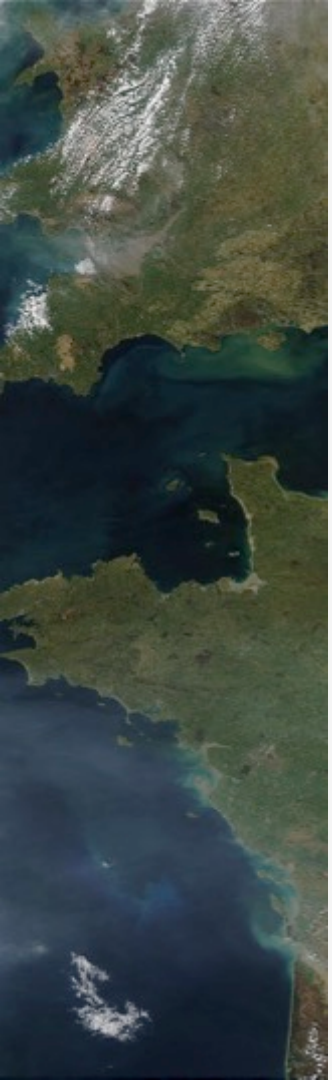


National Aeronautics and Space Administration

# Applied Remote Sensing Training Program

http://arset.gsfc.nasa.gov

@NASAARSET

Cindy Schmidt
BAERI/NASA Ames Research Center

NASA Wildland Fire Applications
2017 Team meeting
March 1, 2017

# Capacity Building Program Elements

**SERVIR:** Building international capacity with hubs in East Africa, Hindu Kush-Himalaya, Mesoamerica, Southeast Asia

**Applied Remote SEnsing Training, ARSET:** Online and hands on basic/advanced training to build skills

**DEVELOP:** Dual workforce/local government capacity building using collaborative feasibility projects, internships

# ARSET Training Formats

## Online

- Offered through the internet
- Available live and recorded
- Typically 1 hr session, once per week, over 4-6 weeks
- Available at all training levels:
  - Fundamentals of Remote Sensing
  - Introductory
  - Advanced

## In-Person

- 2-7 days in length
- Held in a computer lab
- Mixture of lectures and exercises
- Locally relevant case studies
- Available levels:
  - Introductory
  - Advanced

## Train the Trainers

- Trainings and materials
- Offered online & in-person
- For organizers seeking to develop their own applied remote sensing training programs

# ARSET Training Levels

**Fundamentals**, Level 0

- Online only
- Assumes no prior knowledge of remote sensing

**Basic Training**, Level 1

- Online and in-person
- Requires level 0 training or equivalent knowledge
- Specific applications

**Advanced Training**, Level 2

- Online and in-person
- Requires level 1 training or equivalent knowledge
- More in-depth or focused topics

**Fundamentals of Remote Sensing**: Satellites, Sensors, Data, and Tools for Land Management & Wildfire Applications

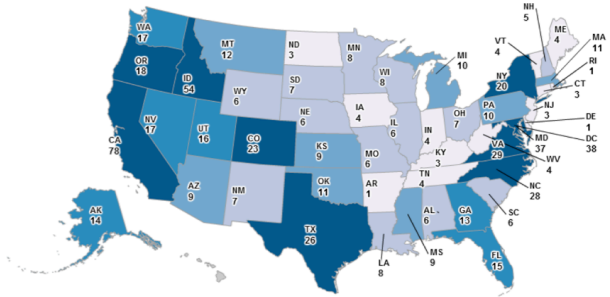
**Basic Training:** Remote Sensing of Forest Cover and Change Assessment for Carbon Monitoring

**Advanced Training:** Advanced Webinar: Land Cover Classification with Satellite Data

# ARSET's Global Footprint

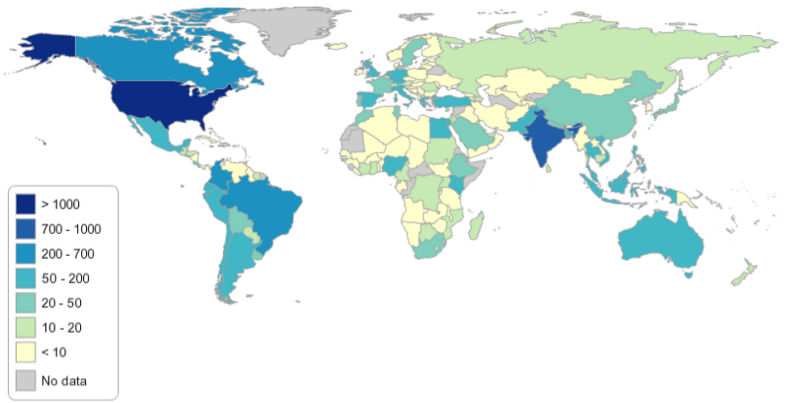
- 81 trainings
- 8,000+ participants
- 1,600+ organizations
- 140+ countries
- All 50 U.S. States

**2009-2015**




ARSET Participants by Country

**2009 – 2016**



# ARSET Team

**Program Support**

Ana Prados, Program Manager (GSFC)
Brock Blevins, Training Coordinator (GSFC)
David Barbado, Spanish Translator (GSFC)
Annelise Carleton-Hug, Program Evaluator
Elizabeth Hook, Technical Writer/Editor (GSFC)
Marines Martins, Project Support (GSFC)

**Disasters & Water Resources**

Amita Mehta, Disasters Lead (GSFC)
Tim Stough, Water Lead (JPL)
Erika Podest, Instructor (JPL)

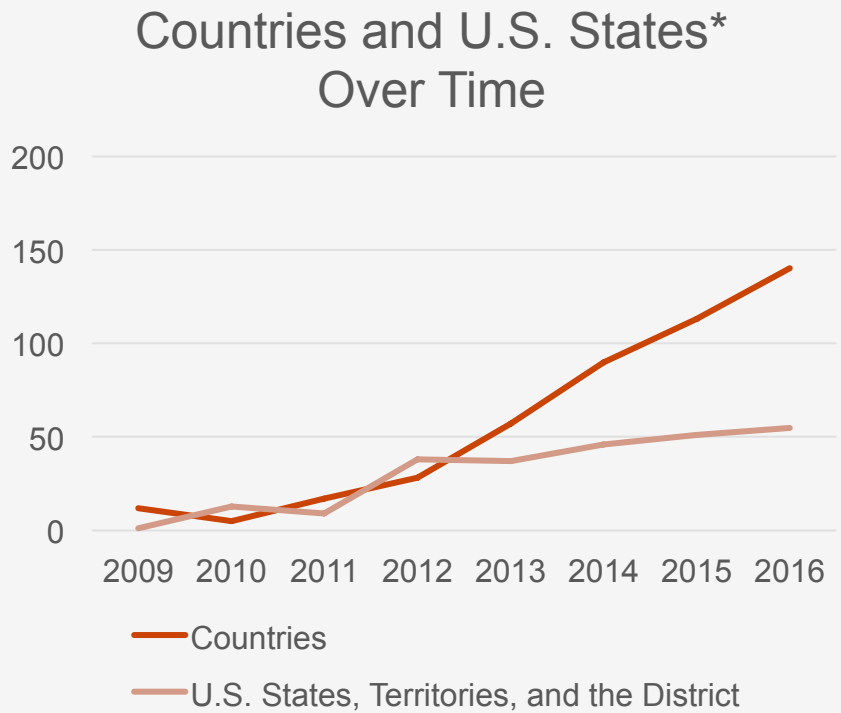
**Land & Wildfires**

Cynthia Schmidt, Lead (ARC)
Amber Jean McCullum, Instructor (ARC)
Sherry Palacios, Instructor (ARC)

**Health & Air Quality**

Pawan Gupta, Air Quality Lead (GSFC)
Melanie Cook, Instructor (GSFC)
Sue Estes, Health Lead (MSFC)

# ARSET Growth

# New Training Approaches

- Advanced/Technical:
  - 4-5 weeks with exercises (using web tools) and case study
  - 4 weeks with exercises using open source GIS software (NDVI)
  - 2 weeks with exercises using open source GIS software lasting 4 hours each session
- Introduction/Awareness:
  - Quick introductions on very specific topics or methods: 15-30 minutes (not done yet)

# Extensive Post-Training Assessment

- ARSET Training Course Application Forms
- Interviews with key informants
- Informal feedback during webinar Q&A period
- Survey 1: completion of each training
- Surveys 2: 6 months post training; measures impact and changes in NASA data use

- Ad hoc interviews to collect “success stories”

**How useful were the following training elements to help you improve your understanding of working with remote sensing data?**

*Table 5. Participant ratings of utility of various training elements. N = 52*

*Note: Green-shaded cells indicate a majority of respondents selected this response*

| | Not useful | Moderately useful | Extremely useful | N/A |
|---|---|---|---|---|
| Overview of fundamentals of remote sensing | 1.92%<br>1 | 53.85%<br>28 | 44.23%<br>23 | 0.00%<br>0 |
| Instruction on available web tools to visualize, access, and analyze data | 0.00%<br>0 | 25.00%<br>13 | 73.08%<br>38 | 1.92%<br>1 |
| Instruction on image pre-processing and processing | 3.92%<br>2 | 27.45%<br>14 | 66.67%<br>34 | 1.96%<br>1 |
| Examples and case studies of data applications | 0.00%<br>0 | 26.92%<br>14 | 73.08%<br>38 | 0.00%<br>0 |
| Hands-on exercises using online webtools | 0.00%<br>0 | 21.15%<br>11 | 75.00%<br>39 | 3.85%<br>2 |

# Wildfire trainings

- Introductory webinar, followed by in-person workshop, Boise, ID, October 2015
- 1-day workshop, International Smoke Symposium, November 2016
- Multiple hyperwall presentations, AGU (Dec. 2016); IUCN World Conservation Congress (Sept. 2016) – Ambrosia, Soja, Schmidt
- Upcoming: 1-day workshop, Fairbanks, Alaska, April 2017


*International Smoke Symposium, Long Beach, CA*

# Webinars and In-Person Trainings 2017 (partial list)

- **Advanced Webinar**: Land Cover Classification with Satellite Imagery, Jan 31-Feb. 7
- **Intro Webinar**: Overview of the Global Disaster and Coordination System, February 21
- **Intro Webinar**: Satellite Derived Annual PM2.5 Data Sets in Support of UN Sustainable Development Goals, March 15 – 29
- **In-Person Training**: Remote Sensing in Arctic/Boreal Wildfire Management and Science, April 3, Fairbanks, AK
- **In-Person Training**: NASA Remote Sensing for Flood Monitoring and Management, April 18-20, Fairfax, VA
- **In-Person Training**: Satellite Remote Sensing of Air Quality, May 23-26, India
- **Intro Webinar**: Remote Sensing of Drought, June 2017
- **Intro Webinar and In-Person Training**: Species Distribution Modeling, June and August 2017
- **In-Person Training**: Remote Sensing of Water Resources, August, Brazil


How can we help you?
How can you help us?
Los Angeles
La Canada Flintridge
Altadena
Burbank
Sierra Madre
Monrovia
Bradbury
Glendale
Pasadena
Antelope Valley Fwy
Foothill Fwy
Golden State Fwy
Glendale Fwy
Ventura Fwy
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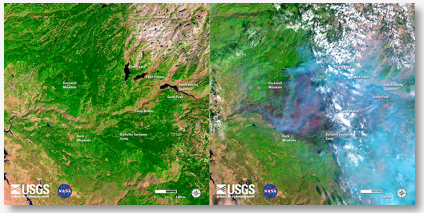
# Introductory/Awareness Webinars

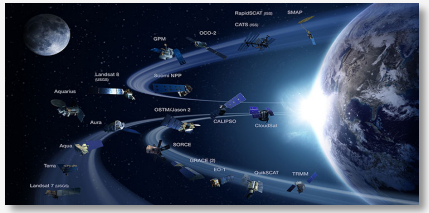
Remote Sensing for Wildfire Applications

## Week 1



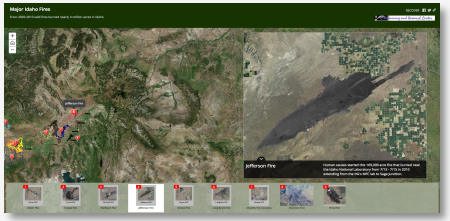

**Overview of satellite remote sensing**

## Week 2




**Platforms and sensors for wildfire applications**

## Week 3

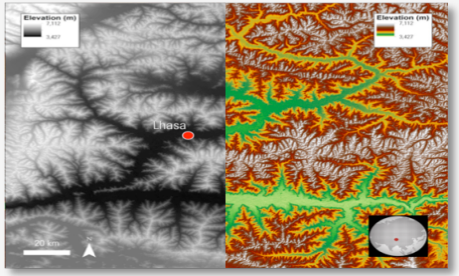



**Products for pre and post-wildfire**

## Week 4


**New techniques and technologies**

## Week 5



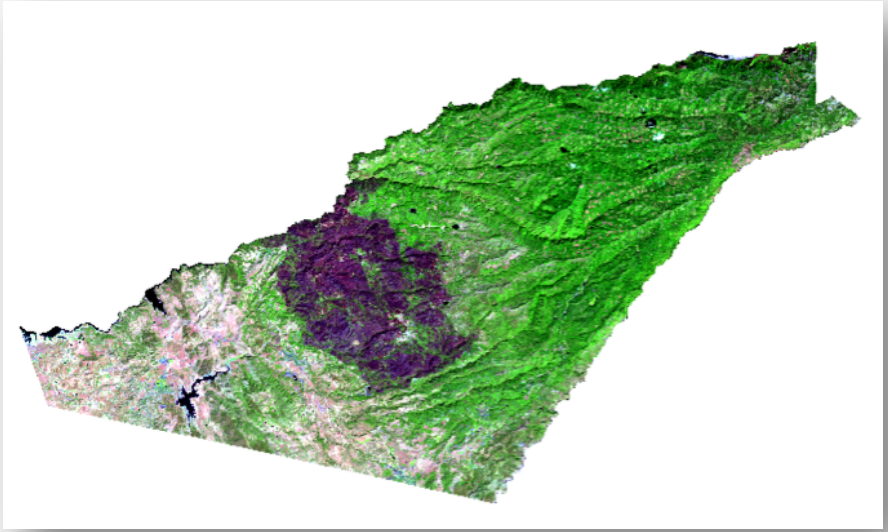

**Terrain data applications**

# Targeted Workshops for Specific Communities: Remote Sensing for Boreal/Arctic Wildfire Management

# Advanced Webinars in Specific Technical Areas: Land Cover Classification

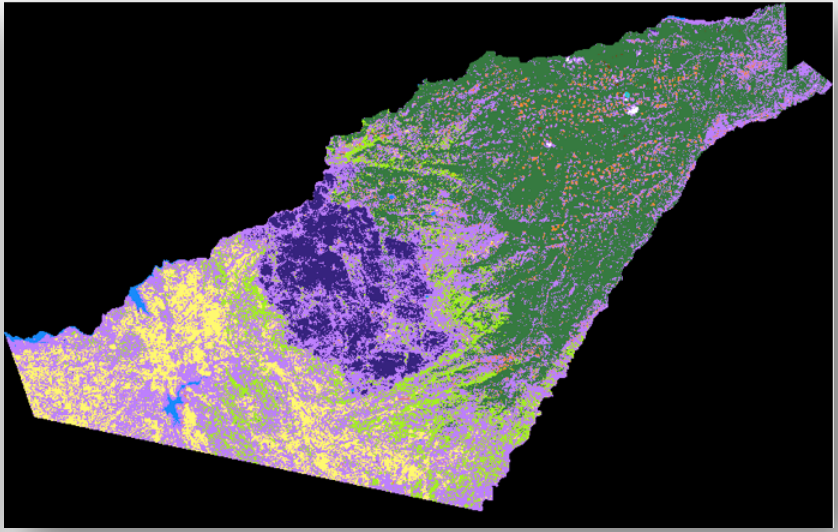
Week 1:

Introduction to Land Cover Classification

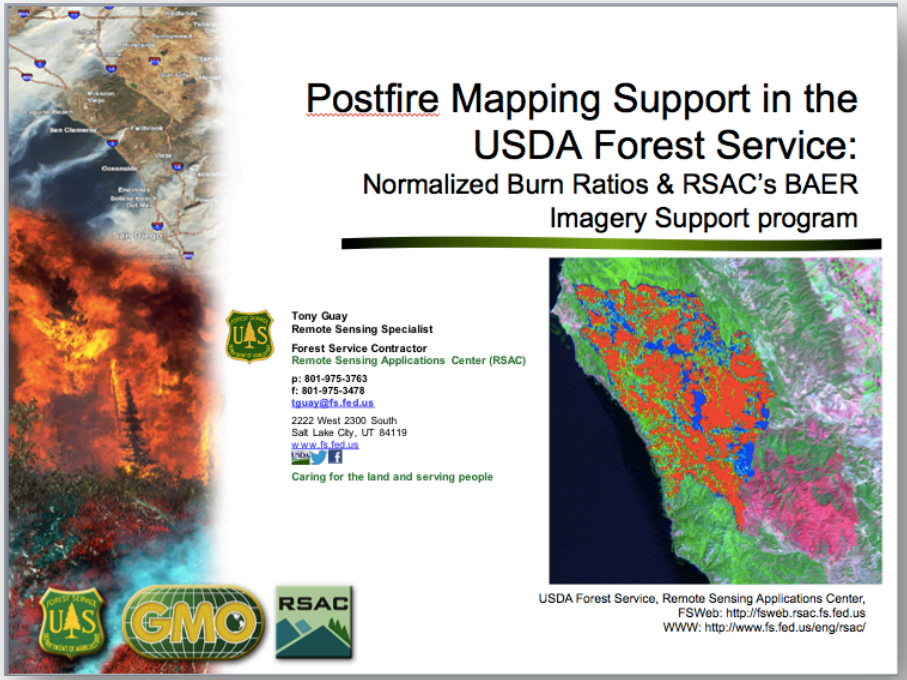


Week 2:

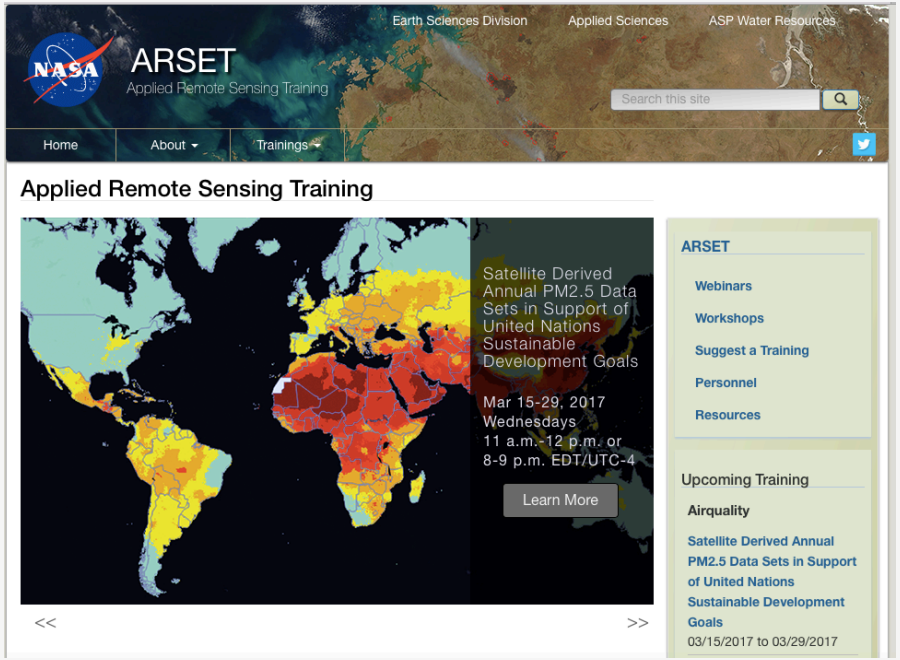
Improving a Supervised Classification

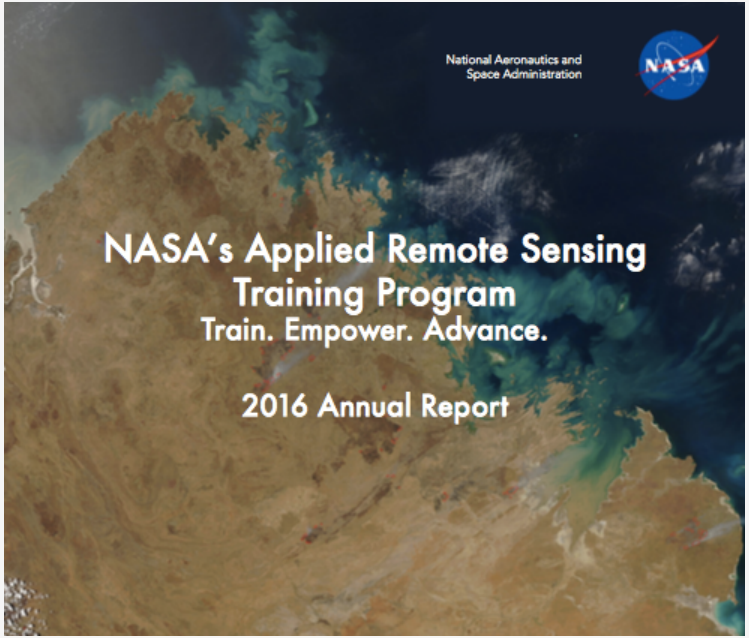


# Be a Guest Speaker in one of our Webinars/Workshops




# More Information




http://arset.gsfc.nasa.gov

Cynthia.L.Schmidt@nasa.gov